



UNITED STATES
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 REGION II
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Report Nos: 50-335/94-07 and 50-389/94-07

Licensee: Florida Power and Light Company
 9250 West Flagler Street
 Miami, FL 33102

Docket Nos.: 50-335 and 50-389

License Nos.: DPR-67 and NPF-16

Facility Name: St. Lucie 1 and 2

Inspection Conducted: February 28 - March 4, 1994

Inspector: D. B. Forbes 3/18/94
 D. B. Forbes, Radiation Specialist Date Signed

Approved by: William H. Rankin 3/22/94
 W. H. Rankin, P. E., Chief Date Signed
 Facilities Radiation Protection Section
 Radiological Protection and Emergency Preparedness Branch
 Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection of the Radiation Protection (RP) program included a review of organization and management controls, training, external exposure control, internal exposure control, control of radioactive materials and contamination, surveys and monitoring, and maintaining occupational exposures As Low As Reasonably Achievable (ALARA).

Results:

The RP technician staff appeared knowledgeable and well trained. The licensee continued to implement effective internal and external exposure programs with all exposures less than 10 CFR Part 20 limits. The Audit and Appraisal Program was considered to be adequate in identifying potential issues. Contamination control and overall housekeeping practices were also considered adequate. Licensee efforts in the performance of ALARA initiatives in the area of respirator reduction was determined by the inspector to be a program strength in meeting ALARA goals. Based on records review, plant inspections, and interviews with licensee management, supervision, personnel from station departments, the inspector found the radiation protection program to be adequate in protecting the health and safety of plant employees.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. Bladow, Manager, Quality Assurance
- *H. Buchanan, Health Physics Supervisor
- *C. Burton, Plant Manager
- *J. Dyer, Quality Control Supervisor
 - L. Jacobus, Senior Technician, ALARA
 - B. Johnson, Supervisor, Dosimetry
 - L. Large, Supervisor, Health Physics Special Projects
- *R. McCullers, Supervisor, Health Physics
- *L. McLaughlin, Licensing Manager K. Payne, Supervisor, ALARA
- *S. Perle, Health Physicist, Corporate
 - L. Pugh, Supervisor, Health Physics Instrumentation
- *B. Robertson, Equipment Specialist, Health Physics
 - L. Rogers, Supervisor, Instrumentation and Controls Department
- *D. Sager, Vice President - Plant St. Lucie
- *J. Voorhees, Supervisor, Quality Assurance
- *J. Walls, Technical Staff, Quality Assurance
- *D. Ware, Supervisor, Technical Training
 - A. Weir, Supervisor, Health Physics

Other licensee employees contacted during this inspection included technicians and administrative personnel.

Nuclear Regulatory Commission (NRC)

- *S. Elrod, Senior Resident Inspector
- *T. Johnson, Senior Resident Inspector, Turkey Point
- *W. Rankin, Chief, Facilities Radiation Protection, RII
- *L. Trocine, Resident Inspector, Turkey Point

*Attended exit interview

2. Organization (83750)

Technical Specification (TS) 6.2 describes the licensee's organization.

The inspector reviewed the licensee's organization, staffing levels, and lines of authority as they related to the Radiation Protection (RP) Department to verify that the licensee had not made organizational changes which would adversely affect the ability to control radiation exposures or radioactive material.

There had been no structural changes in the RP Department since the previous inspection. The health physics (HP) staff employs approximately 51 personnel which includes 31 Radiation Protection Men (RPMs). The RPMs observed performing work and interviewed by the inspector appeared knowledgeable and well trained.

The inspector discussed with licensee representatives the planned staffing for the ongoing Unit 2 Refueling Outage. Licensee representatives stated that approximately 31 HP junior and 61 HP senior contractor technicians were employed to supplement the plant organization during the outage along with 42 decon contractor technicians and 16 dosimetry contractor technicians. This level of additional technician support is consistent with previous outages. Cognizant licensee personnel stated that the St. Lucie site had an HP contractor returnee rate of 84 percent and a 98 percent returnee rate for contractor technicians that had worked in the FPL system.

The inspector concluded that the licensee's organization in the areas of Radiation Protection satisfied the requirements of the TS.

Based on discussions with licensee representatives and observations of activities in progress, no concerns were identified regarding the licensee's organization and staffing which was adequate to support ongoing activities. However, the small number of permanent RPMs employed at the site has resulted in a minimal number of permanent RPMs assigned for backshift HP coverage. As a result, the RPM staff on backshift is not as strong as the dayshift.

No violations or deviations were identified.

3. Audits and Appraisals (83750)

TS 6.5.2.8 requires that audits of plant activities be performed under the cognizance of the Company Nuclear Review Board (CNRB) and that the audits encompass, in part, the conformance of plant operation to provisions contained within the TSs and applicable licensee conditions at least once per 12 months.

The inspector discussed the Quality Assurance (QA) audit process with QA auditors and QA management personnel. Florida Power and Light (FPL) company had previously performed an annual audit in the functional area of HP and radwaste. Licensee personnel informed the inspector that performance monitoring audits will be performed on a monthly basis in functional areas of HP, radwaste, and radiography. The inspector discussed the monthly performance monitoring audit process with the lead auditor permanently assigned to audit HP, radwaste, and radiography. The inspector also reviewed the scope of the activities to be audited as outlined in the FPL Annual Audit Program Plan for 1994, JQS-93-394, dated December 17, 1993, in addition to checklist used by the auditors in the area of HP. The combined scope of these planned monthly audits appeared to exceed in total comprehensiveness the scope of the prior annual audit. Cognizant licensee representatives stated that scheduling of monthly audits to coincide with work activities provided a better opportunity to identify program weaknesses throughout the year in lieu of the once a year audit, while continuing to meet the requirements for an annual audit. The licensee also informed the inspector that a major HP audit would be conducted every two years in addition to the monthly performance monitoring audits.

a. Audits

The inspector reviewed the most recent comprehensive audit of the RP program completed July 20, 1993 (Report number QSL-OPS-93-13), and an audit of the Waste Shipping and Handling Program completed February 3, 1994 (Report number QSL-OPS-93-35). The inspector also reviewed two Monthly Performance Monitoring Audits in the area of HP conducted during the month of August 1993 (Report number QSL-OPS-93-33), and December 1993 (Report number QSL-OPS-93-40). These audits fulfilled the TS required frequency for such audits. Based on a review of the licensee audits and the associated checklists used by QA to evaluate the RP Program, the inspector determined that the audits were detailed and were sufficient in scope to include the major radiation protection functional areas. Non-compliances as well as areas for improvement (i.e., "comments" in the audit reports) were documented, reported to licensee management, and tracked for completion of corrective actions. The inspector noted that actions on selected deficient areas were both appropriate and timely.

b. Radiological Incident Reporting System

The inspector reviewed the licensee's RP internal program for identifying and correcting deficiencies and weaknesses related to radiation exposure and the control of radioactive material. The program consisted of the Radiation Deficiency Report (RDR). The inspector reviewed the five RDRs written in 1993 and the one RDR written in 1994. The inspector determined the RDRs were well documented and corrective action was assigned.

No violations or deviations were identified.

4. Training and Qualification (83750)

During processing into the FPL facility, the inspector was provided training normally given NRC personnel for site access. The Region-based inspector reviewed the General Employee Training (GET) Handbook provided by the licensee. Training in site specific aspects of the handout were reviewed with the inspector by cognizant plant personnel. The inspector reviewed a training film provided to employees which addressed the requirements specified for entering and exiting radiological areas using Radiation Work Permits (RWPs) and Digital Alarming Dosimeters (DADs).

The inspector interviewed plant workers, HP personnel and managers, and the technical training staff to determine the effectiveness of the revised 10 CFR Part 20 training. The revised 10 CFR Part 20 training was part of a continuing training program to prepare HP personnel for procedural changes which were implemented January 1, 1994. The inspector also reviewed lesson plans, handouts, and examinations administered to RPMs and determined the level of knowledge required by the licensee for RPMs to perform HP activities was appropriate.

Based on observations and discussions with plant personnel, training in these areas appeared adequate to support ongoing work.

No violations or deviations were identified.

5. External Exposure Control

10 CFR 20.1201(a) requires each licensee to control the occupational dose to individual adults, except for planned special exposures under 10 CFR 20.1206 to the following dose limits:

- An annual limit, which is the more limiting of:
 - The total effective dose equivalent being equal to 5 rems;
or
 - The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems.
- The annual limits to the lens of the eye, to the skin, and to the extremities, which are:
 - An eye dose equivalent of 15 rems, and
 - A shallow-dose equivalent of 50 rems to the skin or to any extremity.

10 CFR 20.1502(a) requires each licensee to monitor occupational exposure to radiation and shall supply and require the use of individual monitoring devices.

10 CFR 20.1501(c)(1) and (2) requires that dosimeters used to comply with 10 CFR 20.1201 shall be processed and evaluated by a processor accredited by the national Voluntary Laboratory Accreditation Program (NVLAP) for the types of radiation being monitored.

a. Personnel Dosimetry

During tours of the plant, the inspector observed personnel wearing appropriate monitoring devices on the location of the body as specified by the RWPs. The inspector reviewed and discussed the licensee's dosimetry program with site personnel and determined licensee dosimetry was being processed under NVLAP certification.

The inspector discussed with cognizant licensee personnel, the applicable controls implemented by the licensee to operate and maintain DADs. At the time of the inspection, the licensee had disabled the dose rate function button on the DADs only allowing workers to view the DADs in the accumulating mode. This change

was performed to prevent workers from using the DADs as survey instruments. The alarms on the DADs however, were set to alarm at a predetermined dose rate and at a predetermined accumulative dose based on individual dose allowances for specific work areas.

b. Whole Body Exposure

The inspector discussed the cumulative whole body exposures for plant and contractor employees. Licensee representatives stated and the inspector confirmed by a selected review of dosimetry records that all whole body exposures assigned since the previous NRC inspection of this area were within 10 CFR Part 20 limits. The licensee's annual person-rem exposure goal for 1993 was 477 person-rem. Actual exposure for 1993 was approximately 460 person-rem. As of March 1, 1994, the licensee's person-rem exposure was approximately 55 person-rem for the ongoing Unit 2 outage compared to a target goal of 53 person-rem for this date. The licensee has established an annual person-rem goal for 1994 of approximately 650 person-rem which includes the work scope of the ongoing Unit 2 outage and also the tentative work scope planned for the Unit 1 outage.

No violations or deviations were identified.

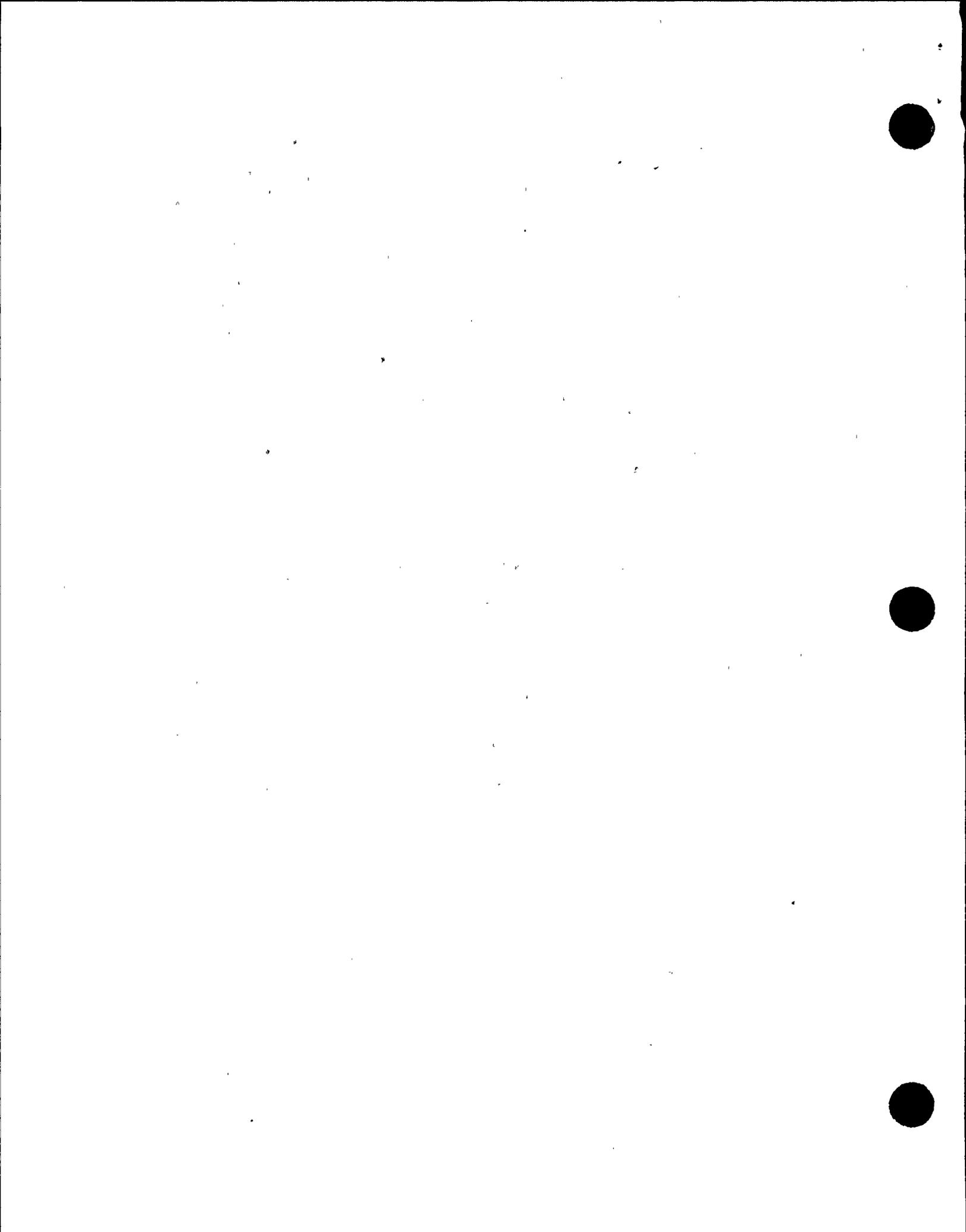
6. Control of Radioactive Material and Contamination, Surveys, and Monitoring

10 CFR 20.1501(a) requires each licensee to make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations and (2) are reasonable under the circumstances to evaluate the extent of radioactive hazards that may be present.

10 CFR 20.1904(a) requires the licensee to ensure that each container of licensed material bears a durable, clearly visible label bearing the radiation symbol and the words "Caution, Radioactive Material," or "Danger, Radioactive Material." The label must also provide sufficient information (such as radionuclides present, and the estimate of the quantity of radioactivity, the kinds of materials and mass enrichment) to permit individuals handling or using the containers, to take precautions to avoid or minimize exposures.

a. Posting and Labeling

During tours of the Unit 2 Containment, Unit 2 Auxiliary Building, and selected outside radioactive material storage areas, the inspector noted that radioactive material areas were appropriately posted and containers were labeled consistent with regulatory requirements.



b. High Radiation Areas

TS 6.12.1 requires, in part, that each High Radiation Area (HRA) with radiation levels greater than or equal to 100 mrem/hr but less than or equal to 1000 mrem/hr be barricaded and conspicuously posted as a HRA. In addition, any individual or group of individuals permitted to enter such areas are to be provided with or accompanied by a radiation monitoring device which continuously indicates the radiation dose rate in the area or a radiation monitoring device which continuously integrates the dose rate in the area, or an individual qualified in radiation protection procedures with a radiation dose rate monitoring device.

During tours of the Unit 2 Reactor Auxiliary Building and the Unit 2 Containment Building, the inspector noted that all HRAs and locked HRAs were locked and/or posted, as required. The inspector performed independent radiation surveys at the boundaries of selected HRAs and locked HRAs verifying licensee survey results. The licensee's posting of the affected areas was conservative and appropriate.

c. Radiation Detection and Survey Instrumentation

During facility tours, the inspector noted that survey instrumentation and continuous air monitors in use within the radiologically controlled area (RCA) were operable and displayed current calibration stickers. The inspector further noted an adequate number of survey instruments were available for use, and background radiation levels at personnel survey locations were observed to be within the licensee's procedural limits.

The inspector reviewed selected records of radiation and contamination surveys performed during 1994, and discussed the survey results with licensee representatives. During tours of the plant, the inspector observed HP technicians performing radiation and contamination surveys.

During facility tours, the inspector reviewed licensee surveys and independently performed surveys and verified radiation and/or contamination levels in selected areas of the Unit 2 Containment Building, the Unit 2 Reactor Auxiliary Building, and Radioactive Material Storage Areas to verify licensee results. No discrepancies were noted.

d. Area and Personnel Contamination Control

The inspector reviewed the licensee's program to control contamination at its source. The inspector noted that the licensee had performed decontamination efforts to reduce contaminated square footage from approximately 4.5 percent of the total RCA or 4500 square feet (ft²) to approximately 1.5 percent



of the total RCA or 1600 ft². The licensee's program to control contamination at its source was considered by the inspector to be a program strength.

The inspector reviewed Personnel Contamination Events (PCEs) for 1994 which included the ongoing outage. At the time of the inspection, the licensee had incurred approximately 11 PCEs through March 3, 1994.

No violations or deviations were identified.

7. Internal Exposure Controls (83750)

10 CFR 20.1703(a)(3) permits the licensee to maintain and implement a respiratory protective program that includes, at a minimum: air sampling to identify the hazard; surveys and bioassays to evaluate the actual exposures; written procedures to select, fit, and maintain respirators; written procedures regarding supervision and training of personnel and issuance of records; and determination by a physician prior to the use of respirators, that the individual user is physically able to use respiratory protective equipment.

10 CFR 20, Appendix A, Footnote (d), requires adequate respirable air of the quality and quantity in accordance with NIOSH/MSHA certification described in 30 CFR Part 11 to be provided for atmosphere-supplying respirators.

30 CFR 11.121 requires that compressed, gaseous breathing air meets the applicable minimum grade requirements for Type 1 gaseous air set forth in the Compressed Gas Association (CGA) Commodity Specification for Air, G-7.1 (Grade D or higher quality).

a. Whole Body Counting

The inspector reviewed selected records of routine and termination whole body counts. For those records reviewed, routine, whole body analysis appeared to be performed appropriately. The licensee informed the inspector that no positive uptakes had been determined in 1993 or 1994.

The inspector examined whole body counting equipment and verified the counting equipment was currently calibrated.

b. Respiratory Protection Equipment and Breathing Air Quality

The inspector examined respiratory equipment for physical integrity which included selected compressors, breathing air manifolds, respirators, and bubble hoods. The inspector observed gauges in use were currently calibrated and carbon monoxide monitoring was being performed. In addition, the inspector further noted that the supplied air hoods, fittings, and hoses

available for use were compatible per manufacturer's instructions. Discussions were held with licensee representatives on testing and qualifying breathing air as Grade D. For the tests reviewed, breathing met Grade D requirements.

The licensee continues to reduce the number of respirators issued while effectively controlling airborne radioactivity. At the time of the inspection the licensee had issued approximately 17 respirators for 1994. The inspector reviewed procedures relating to internal exposure controls which included the following:

- Health Physics Procedure (HPP-60), Respiratory Protection Manual, Revision (Rev.) 0, dated December 29, 1993
- Health Physics Procedure (HPP-61), Use of Respiratory Protective Equipment, Rev. 0, dated December 21, 1993
- Health Physics Procedure (HPP-62), Inspection and Maintenance of Respiratory Protection Equipment, Rev. 0, dated December 14, 1993
- Health Physics Procedure (HPP-65), Cleaning and Decontamination of Respiratory Protection Equipment, Rev. 0, dated December 20, 1993

No violations or deviations were identified.

8. Operational and Administrative Controls (83750)

a. Radiation Work Permits (RWPs)

The inspector reviewed selected routine and special RWPs for adequacy of the RP requirements based on work scope, location, and conditions. For the RWPs reviewed, the inspector noted that appropriate protective clothing, respiratory protection, and dosimetry were required. During tours of the plant, the inspector observed the adherence of plant workers to the RWP requirements and discussed the RWP requirements with plant workers at the job site.

The inspector found the licensee's program for RWP implementation to adequately address radiological protection concerns, and to provide for proper control measures.

b. Notices to Workers

10 CFR 19.11(a) and (b) require, in part, that the licensee post current copies of 10 CFR Part 19, Part 20, the license, license conditions, documents incorporated into the license, license amendments and operating procedures, or that a licensee post a notice describing these documents and where they be examined.

10 CFR 19.11(d) requires that a licensee post form NRC-3, Notice to Employees. Sufficient copies of the required forms are to be posted to permit licensee workers to observe them on the way to or from licensee activity locations.

During the inspection, the inspector verified that NRC Form-3 was posted properly at plant locations permitting adequate worker access. In addition, notices were posted referencing the location where the license, procedures, and supporting documents could be reviewed.

No violations or deviations were identified.

9. Program for Maintaining Exposures As Low As Reasonable Achievable (83750)

10 CFR 20.1101(b) requires that the licensee shall use, to the extent practicable, procedures and engineering controls based upon sound RP principles to achieve occupational doses and doses to members of the public that are ALARA.

Regulatory Guides 8.8 and 8.10 provide information relevant to attaining goals and objectives for planning and operating light water reactors and provide general philosophy acceptable to the NRC as a necessary basis for a program of maintaining occupational exposures ALARA.

The inspector observed briefings conducted for workers prior to entering the RCA and also observed briefings for personnel entering the Unit 2 containment to perform Steam Generator (SG) maintenance and maintenance on piping modifications attaching to the pressurizer safety code valves. The inspector observed RPMs interfacing with workers during these maintenance evolutions to minimize personnel dose. RPMs were observed in the Unit 2 containment using video monitors, communication headsets, and teledosimetry, to closely monitor the work in progress. Real time video monitors were also located in the briefing trailer outside the containment building to allow management personnel and workers to view ongoing operations in the Unit 2 containment to minimize containment entries. The inspector also observed the use of low dose waiting areas inside the containment for workers to minimize exposure. The interaction between HP personnel and the workers appeared adequate.

The inspector discussed the planning and preparation for the ongoing Unit 2 outage and the upcoming Unit 1 outage with ALARA management. Specific areas discussed included increases in staffing, special training, equipment and supplies, HP involvement in outage planning, licensee control over HP technicians, dose reduction methods to be employed, and the major work scope to be performed.

General area dose rates are significantly higher in Unit 1 Containment as compared to general area dose rates in the Unit 2 containment. The SGs in Unit 1 are a major contributor to these higher dose rates. The SG repairs and inspections in Unit 1 will be a major dose contributor

during the Unit 1 upcoming outage; however, the licensee has significantly reduced dose during SG nozzle dam installation by using nozzle dams which could be installed faster than previously used ones and by performing mockup training evolutions for personnel performing the installation. The licensee is currently planning to replace the Unit 1 cavity seal ring and neutron shield with a permanently installed shielded cavity seal ring which will eliminate the need to remove existing steel and shield water bags during future outages. The licensee is estimating this modification will result in a reduction of 10 person-rem per outage.

The inspector observed the licensee has effectively reduced the number of respirators used as discussed in Paragraph 7 above to minimize internal dose by the effective use of worksite ventilation, job history, process air sampling, and worker training. The licensee informed the inspector the reduced number of personnel facial contamination events in areas where respirators were previously worn could be attributed to the use of disposable face shields which met ALARA objectives without adversely effecting worker performance.

No violations or deviations were identified.

10. Exit Meeting

At the conclusion of the inspection on March 4, 1994, an exit meeting was held with those licensee representatives indicated in Paragraph 1 of this report. The inspector summarized the scope and findings of the inspection. The licensee did not indicate any of the information provided to the inspector during the inspection as proprietary in nature. Dissenting comments were not received from the licensee.